

PATUXENT RESERVOIRS WATERSHED
PROTECTION GROUP



2013 ANNUAL REPORT
OF THE
TECHNICAL ADVISORY COMMITTEE

A Message from the Chair

As the 2013 Chair for the Patuxent Reservoirs Watershed Technical Advisory Committee (TAC) and as a resident of the watershed, I greatly appreciate the benefits from our interjurisdictional and interagency efforts. Since 1996, we have identified priority resources, goals for their protection, and implementation actions needed to meet those goals.

This year, the TAC agencies have been working to set the stage for developing a specific implementation plan to reduce pollutants to the reservoirs which will meet the regulatory Total Maximum Daily Loads (TMDLs) and achieve our other resource protection goals. We also worked on revisions to the existing Agricultural Best Management Practices cost-share program to better reflect current needs and more effectively use the funding in the Watershed. We met with our counterparts from the Baltimore Reservoirs to learn more about proposed revisions to their water quality monitoring program and discuss potential use in the Patuxent Reservoirs.

Early on in our joint agency efforts, we recognized the importance of educating and engaging those who live, work, or enjoy recreation in the Patuxent Reservoirs Watershed. During 2013, there have been a host of public outreach and involvement activities, many of which were organized by Kim Knox and Sandy August from WSSC Communications and Community Relations. After many years as a pillar for classroom and other outreach activities, Sandy is retiring in early 2014. She will be missed by those who worked with her as well as by the rest of the Reservoirs Watershed community.

Another key retirement this year was that of Howard Saltzman, Howard County Department of Public Works, a long-time TAC member and Chair during 2011. Howard provided great leadership and balance in the TAC discussions that year, as we began to revise the priority resources charts and re-evaluated the purpose for the annual Policy Board meetings. I thank my fellow TAC members for their commitment this year to our work efforts, with a special thanks to Steve Nelson, WSSC liaison to the TAC, for providing continuity and assuring communication among members between meetings. We will need that commitment, communication, and continuity next year and beyond as we tackle the details needed for the next steps in a successful TMDL implementation plan.

Meo Curtis, Montgomery County Department of Environmental Protection
Chair, Technical Advisory Committee

Acknowledgements

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Our sincere thanks are given to the members of the Technical Advisory Committee and others listed below for their efforts over the last year. Special thanks go to Angela Morales of Howard County and Jerry Maldonado and Debbie Weller of Prince George's County who served on the TAC until 2013. Jerry served on the TAC for many years most recently as Chair in 2012. The TAC welcomes as new members Mary Conway from Prince George's County Department of Environmental Resources, Christine Nagle from the Maryland Department of the Environment, and Christine Smith from Howard County's Department of Public Works.

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Executive Summary

Two reservoirs on the Patuxent River, Triadelphia and Rocky Gorge (aka T. Howard Duckett), are significant water supply sources for the Washington D.C. metropolitan area serving residents primarily in Montgomery and Prince George's Counties (Figure 1). The Patuxent Reservoirs' 132-square mile watershed includes land mostly in Howard and Montgomery Counties (about 99%) and the remaining land is in Prince George's and Frederick Counties (Figure 2).

In 1998, the Maryland Department of the Environment (MDE) identified both reservoirs as impaired by nutrients and identified Triadelphia Reservoir as impaired by sediment; consequently, MDE determined that the reservoirs were unable to achieve State water quality standards for their designated uses, one of which is public water supply. To address these impairments, the US Environmental Protection Agency (EPA) approved Total Maximum Daily Loads (TMDL) for both reservoirs in November 2008. A phosphorus TMDL was established for each reservoir, and a sediment TMDL was established for Triadelphia Reservoir.

Since 1997, the Technical Advisory Committee (TAC) has completed an Annual Report to summarize its accomplishments and identify funding needs to address watershed priority resource issues. This annual report provides an update of on-going efforts and those completed in 2013.

A work plan is provided at the end of this report (Table 6). The work plan lists implementation needs and items for each of the priority resources along with the responsible agency or agencies and the corresponding budget expenditure for the current year.

The following are highlights from 2013:

1. In 2012, The Policy Board approved a TAC request to provide \$70,000 in Fiscal Year 2014 (FY14) to hire a part-time staff or consultant position that will assess what progress has been achieved via agricultural and urban BMPs over the past decade towards meeting the pollutant reduction goals specified in the TMDLs for the reservoirs. A subcommittee of the TAC, comprised of the four funding agencies, was convened in early 2013. The subcommittee drafted a scope of work for the project, and drafted a Memorandum of Understanding (MOU) that would formalize the funding contributions. The draft MOU underwent a succession of technical and legal reviews and is expected to be signed in early 2014. The subcommittee also prepared a draft solicitation notice to be used for identifying the qualifications of consultants and their personnel, and for selecting the firm to perform the work.
2. In 2012, the Policy Board also approved a request for \$50,000 to continue funding the Patuxent Reservoirs Watershed Agricultural Cost-Share Program at the Howard Soil Conservation District. Efforts in 2013 focused on collaboration among partnership

agencies to update and amend details of the original MOU that established the agricultural cost-share program. A subcommittee was tasked with developing recommendations to improve the usefulness of the cost-share program by broadening the practices and landowners that could qualify for assistance. The subcommittee drafted a new MOU that underwent a succession of technical and legal reviews and is also expected to be signed in early 2014.

3. The Washington Suburban Sanitary Commission (WSSC) completed its 22nd year of reservoir water quality monitoring to provide data for technical analysis and long-term trend evaluation to support protection of the reservoirs and drinking water supply. Chlorophyll-*a* is one of the indicators of water quality presented in this annual report. Chlorophyll-*a* results from 2013 did not exceed either threshold established by the MDE for public water supply reservoirs.
4. Following a March 2013 sanitary sewer overflow from a WSSC Wastewater Pumping Station (WWPS) into the Reddy Branch tributary to the Rocky Gorge Reservoir, the TAC assessed all of the WWPS facilities within the Patuxent Reservoirs Watershed. Of the 13 facilities located in the watershed, six are operated by WSSC and seven are operated by Howard County. All of the Howard County WWPSs are in close proximity to Rocky Gorge Reservoir; as is one WSSC facility. All of the WWPS facilities have written spill response plans, receive routine preventive maintenance and inspections, and all facilities have built-in redundancy for their power supplies (i.e., backup generator or dual feed electric supply). Taken together, these mitigation measures suggest a minimal chance that wastewater releases would adversely affect the drinking water supply. It is noteworthy that the 2013 overflow was not a failure at the WWPS, but rather was a result of a broken force main that required the pumping station to be taken out of service temporarily.
5. Technical and financial assistance from the Howard and Montgomery Soil Conservation Districts (SCDs) resulted in the installation of 141 agricultural Best Management Practices (BMPs) in the Patuxent Reservoirs Watershed. In addition, the districts developed or revised 32 Soil Conservation and Water Quality Plans for 3,532 acres of farm land in the watershed.
6. A variety of successful outreach events occurred in 2013 with a conservative estimate of at least 2,000 participants and volunteers. Many agency events occurred throughout 2013 including: a second tree planting at the Oaks Landfill in Montgomery County organized by the Montgomery SCD; tree plantings at WSSC's Scott's Cove and Pig Tail Recreation Areas; watershed and Adopt-A-Road clean-ups sponsored by the Izaak Walton League of America-Wildlife Achievement Chapter; and three, annual WSSC-sponsored events (H2O Summit, Warbler Day and Family Campfire). In addition, four outreach events to the agricultural community were held by both SCDs, including a pasture management workshop.

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Abbreviations

| Abbreviation | Definition |
|-----------------|--|
| aka | Also Known As |
| BMP | Best Management Practice |
| BRX | (Howard County) Business Rural Crossroads |
| chl- <i>a</i> | Chlorophyll- <i>a</i> |
| DEP | (Montgomery County) Department of Environmental Protection |
| DER | (Prince George's County) Department of Environmental Resources |
| DO | Dissolved Oxygen |
| DOT | (Montgomery County) Department of Transportation |
| DPW | (Howard County) Department of Public Works |
| ea | Each |
| EPA | U.S. Environmental Protection Agency |
| FY | Fiscal Year |
| HC | Howard County |
| HSCD | Howard Soil Conservation District |
| IBI | Index of Biological (or Benthic) Integrity |
| IWLA-WAC | Izaak Walton League of America-Wildlife Achievement Chapter |
| LID | Low Impact Development |
| MC | Montgomery County |
| MDE | Maryland Department of the Environment |
| M-NCPPC | Maryland-National Capital Park and Planning Commission |
| MS ₄ | Municipal Separate Storm Sewer System |
| MSCD | Montgomery Soil Conservation District |
| mg/L | Milligrams per Liter (equivalent to part per million) |
| µg/L | Micrograms per Liter (equivalent to part per billion) |
| NPDES | National Pollutant Discharge Elimination System |
| PGC | Prince George's County |
| pH | Power of Hydrogen |
| PRWPG | Patuxent Reservoirs Watershed Protection Group |
| PSA | (Howard County) Planned Service Area |
| RC | (Howard County) Rural Conservation |
| RR | (Howard County) Rural Residential |
| SCD | Soil Conservation District |
| TAC | Technical Advisory Committee |
| TMDL | Total Maximum Daily Load |
| TOC | Total Organic Carbon |
| WSSC | Washington Suburban Sanitary Commission |
| WWPS | Wastewater Pumping Station |

Introduction

The Washington Suburban Sanitary Commission (WSSC) continues to provide potable water from the Patuxent Reservoirs system to about 650,000 customers, located mainly in eastern Montgomery County and Prince George's County (Figure 1). The Patuxent Reservoirs Watershed encompasses about 132 square miles located almost entirely (99%) in Howard County (HC) and Montgomery County (MC), with the remaining drainage area located in Prince George's and Frederick Counties (Figure 2).

This year marks the 17th year that the Technical Advisory Committee (TAC) has completed an Annual Report, which summarizes accomplishments and funds expended to meet goals set by the TAC to protect the six priority resources. An update of activities in 2013 is provided of on-going efforts to address the implementation items for the Priority Resources. This Annual Report will be accompanied by a separate, supplemental document to provide detailed background information for items summarized in this report.

In 2003, the Goals-Setting Workgroup of the TAC re-evaluated the original list of action items and proposed a revised action plan, which was approved by the Policy Board. This revised list of action items or work plan, titled *Performance Measures and Goals for Priority Resources*, represents a continuation of the commitment to coordinate protection efforts in coming years (Table 5). This table contains goals, performance measures, implementation items, and a time line to achieve each goal for six priority resources selected by the TAC. Those priority resources include the following:

- Reservoirs and drinking water supply
- Terrestrial habitat
- Stream systems
- Aquatic biota
- Rural character and landscape, and
- Public awareness and stewardship.

Although progress towards a number of these goals has been made over the years, the timelines established for the implementation items have generally not been met due to limited agency work programs and budgets, and other priorities. The TAC will continue to implement items associated with each of the priority resources primarily through existing TAC agency responsibilities and work programs. A table of work plan expenditures is provided at the end of this report (Table 6) containing a list of implementation needs and action items for each of the priority resources, along with the responsible agency or agencies and the corresponding budget expenditure for the current year.

In 1998, the Maryland Department of the Environment (MDE) identified both reservoirs as impaired by nutrients and identified Triadelphia Reservoir as impaired by sediment; consequently, MDE determined that the reservoirs were unable to achieve State water quality

standards for their designated uses, one of which is a public drinking water supply. To address these impairments, the US Environmental Protection Agency (EPA) approved Total Maximum Daily Loads (TMDLs) for both reservoirs in November 2008. A phosphorus TMDL was established for each reservoir, and a sediment TMDL was established for Triadelphia Reservoir. Significant phosphorus load reductions are required (58% for Triadelphia Reservoir, 48% for Rocky Gorge Reservoir). A large majority of the needed phosphorus load reductions (76% for Triadelphia, 65% for Rocky Gorge) was allocated to non-point sources of pollution (e.g., runoff from agricultural and low density residential lands).

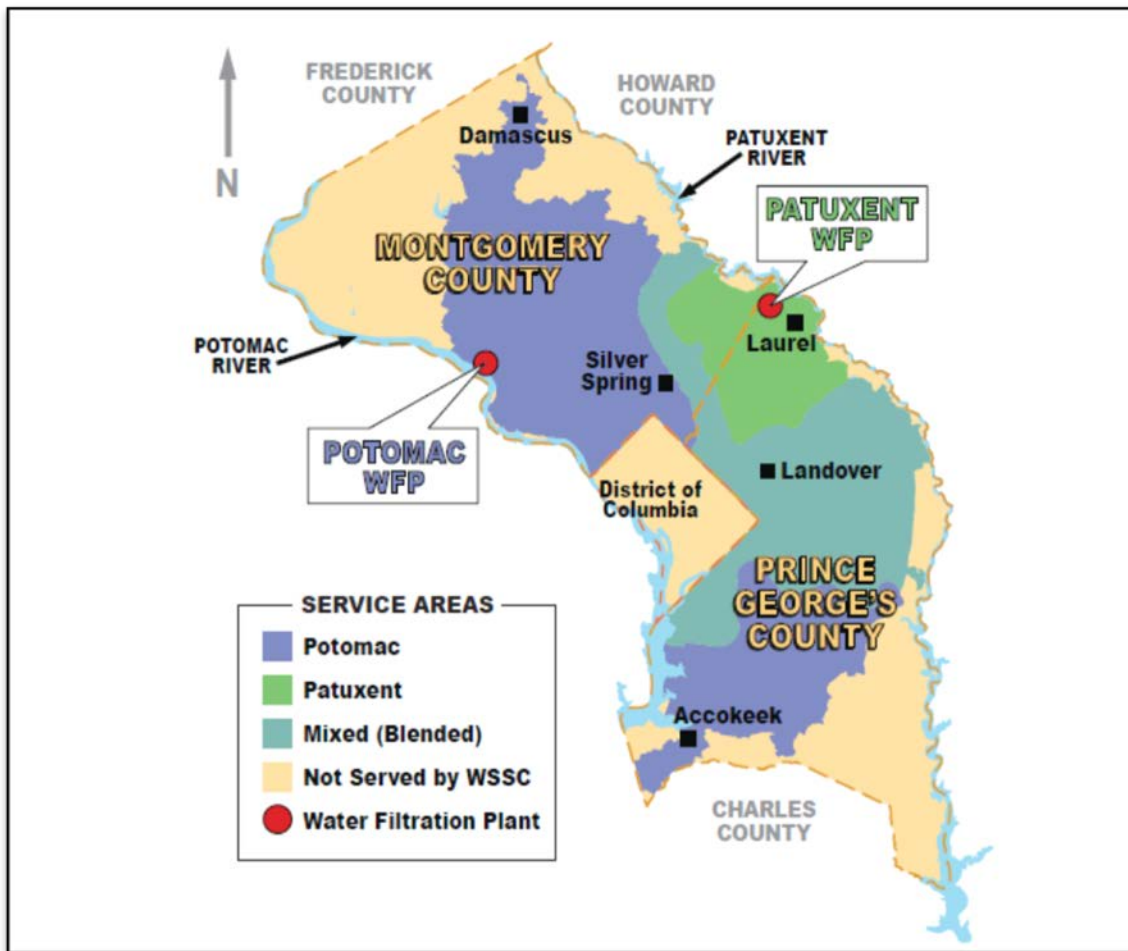


Figure 1. WSSC Drinking Water Service Area - Patuxent & Potomac Sources
(excludes wholesale service to Howard and Charles Counties)

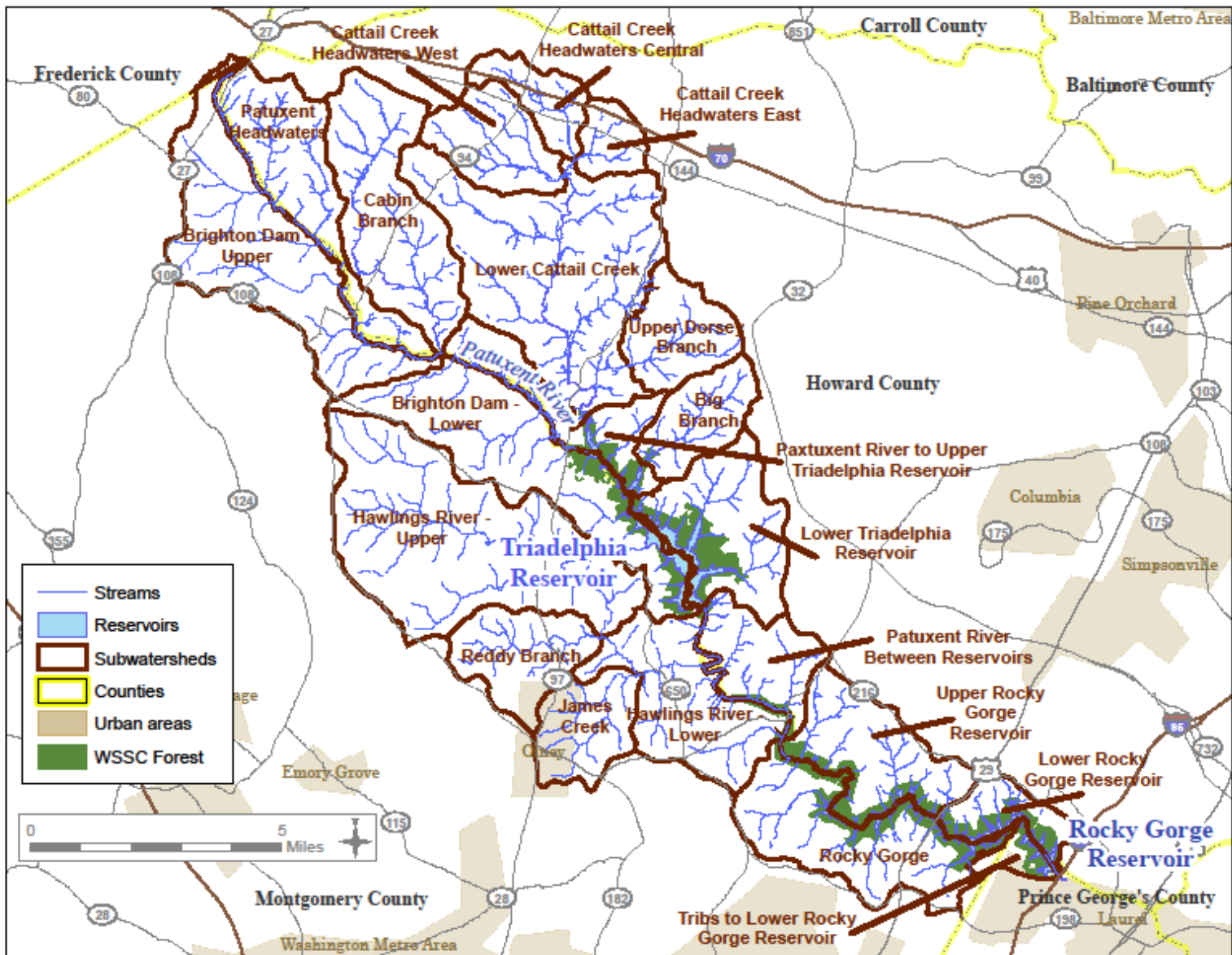


Figure 2. Patuxent Reservoirs Watershed (from Versar 2009)

Total Maximum Daily Load Implementation

During the December 2012 meeting of the Patuxent Reservoirs Watershed Protection Group (PRWPG), the Policy Board approved the TAC's recommendation to allocate \$70,000 in Fiscal Year 2014 (FY14) for a part-time consultant or temporary staff position. The project will assess progress made towards achieving the pollutant reduction goals specified in the TMDLs for the reservoirs. The approved TMDL document stipulates a 58% and 48% reduction in total phosphorus loads to Triadelphia and Rocky Gorge Reservoirs, respectively, are needed to meet Maryland's water quality standards.¹ The TMDL document also specifies a 29% reduction in sediment loads to the Triadelphia Reservoir.

A consensus was reached that four of the seven agencies would fund the request at the agreed upon contribution levels shown below in Table 1.

Table 1. Agency Funding Contributions for TMDL Progress Assessment

| Funding Agency | Contribution |
|--|---------------------|
| Maryland-National Capital Park and Planning Commission | \$20,000 |
| Montgomery County | \$10,000 |
| Prince George's County | \$10,000 |
| WSSC | \$30,000 |
| TOTAL | \$70,000 |

A subcommittee of the TAC, comprised of the four funding agencies, was convened in early 2013. The subcommittee drafted a scope of work for the project, and drafted a Memorandum of Understanding (MOU) that would formalize the funding contributions. The draft MOU underwent a succession of technical and legal reviews and is expected to be signed in early 2014. WSSC was selected as the agency that would administer the project, including receiving and disbursing the funds. At the end of 2013, no funds had been paid into the dedicated account as the MOU was not yet formally in place. The subcommittee also prepared a draft solicitation notice to be used for identifying the qualifications of consultants and their personnel or a temporary employee, and for selecting the firm or individual to perform the work.

¹ Maryland Department of the Environment. June 2008. *Total Maximum Daily Loads of Total Phosphorus and Sediments for Triadelphia Reservoir (Brighton Dam) and Total Maximum Daily Loads of Total Phosphorus for Rocky Gorge Reservoir, Howard, Montgomery and Prince George's Counties, Maryland*. Baltimore, MD.

Municipal Separate Storm Sewer System (MS₄) Permit Implementation Plans

Montgomery County

Watershed Assessments and Project Inventories

In April 2013, the Montgomery County Department of Environmental Protection (DEP) began the consultant contract to complete assessments and restoration project inventories in those watersheds not yet assessed. Projects selected will add runoff management to currently unmanaged or undermanaged developed areas and reduce pollutants towards achieving the County's National Pollutant Discharge Elimination System (NPDES) MS₄ Permit wasteload allocations. The Patuxent Reservoirs drainage was included in this current assessment.

In Montgomery County, the Patuxent Reservoirs drainage is divided into three subwatersheds: the Upper Patuxent subwatershed, which drains to Triadelphia Reservoir, and the Hawlings River and Lower Patuxent subwatersheds, both of which drain to Rocky Gorge Reservoir.

The assessments began with a desktop review for all data and maps in the target watersheds. These data and institutional knowledge are used to identify areas and specific sites for subsequent field assessment. Three types of projects are being considered and are summarized in the Table 2. Stream restoration was not considered because most of the stream areas are on private property and DEP experience has shown that success for implementation requires public access.

Once the field assessments and subsequent project feasibility assessments are completed, the consultant and DEP will screen potential projects using set criteria to set priorities. The screening is based on criteria including: stream resource condition (poor or fair), amount of stormwater management added, potential for enhancing adjacent natural areas, and ease of access. The priority projects will be added to the DEP's restoration projects inventory for consideration in future fiscal years. The inventory will include conceptual designs that will need to be finalized prior to permitting and construction. A draft report is scheduled for the late summer of 2014.

Table 2. Montgomery County Project Inventory Types

| | |
|----------------------------------|--|
| New BMP Assessments | Conventional and ESD practices to add runoff management to unmanaged or undermanaged impervious areas |
| # Targeted | goal of up to 52 |
| Pervious Area Assessments | Possible reforestation or enhancement to meet MDE criteria for equivalent impervious area managed |
| # Targeted | goal of up to 10 |
| Neighborhood Assessments | Assess residential properties for on-lot ESD practices (RainScapes) Most of these are in the Olney area |
| # Targeted | 13.6 field days (goal of up to 2048 lots) |

Howard County

Howard County reports on progress made toward TMDL implementation in its NPDES MS₄ Annual Report. Annual Report number 18, submitted in June 2013, is available through the County government's [Stormwater Management web page](#).

To-date, Howard County has achieved the following pollutant load reductions to the Patuxent Reservoirs:

- Triadelphia: 1.84% Nitrogen; 2.89% Phosphorous; 4.28% Sediment
- Rocky Gorge: 4.60% Nitrogen; 7.89% Phosphorous; 10.71% Sediment

Howard County has completed two countywide assessments, which identified water quality enhancement projects to help the County meet its TMDL requirements. The list of projects will be evaluated based on impervious acres treated and available funding and, if possible, may be implemented over a number of years.

- The first study evaluated all county-owned properties (including properties owned by the Howard County Public School System) to identify low impact development (LID) projects to treat currently untreated impervious areas. Within the Triadelphia Reservoir watershed, one site was identified at the former Bushy Park Elementary School site, with the potential for up to 1.1 acres of impervious acre treatment.
- The second study evaluated all dry ponds and extended detention ponds in the County to identify opportunities for water quality retrofits. The following sites were identified within the Patuxent Reservoirs Watershed (Table 3).

Table 3. Opportunities in Howard County for water quality retrofits

| Reservoir | Proposed Project Name | Project Type | Impervious Acres treated |
|-------------|------------------------|--|--------------------------|
| Triadelphia | Glenelg High School | Infiltration basin | 2.59 |
| | | Sub-total | 2.59 |
| Rocky Gorge | Cardinal Forest Circle | Bioretention | 9.15 |
| | Cherrystone Court | Wet extended detention | 1.05 |
| | Heron's Flight | Step pool conveyance system upstream of dry pond | 8.91 |
| | | Sub-total | 19.11 |
| | | Grand total | 21.70 |

Annual Progress on Implementation Items for the Priority Resources

Reservoir and Water Supply

Reservoir Water Chemistry Monitoring

The WSSC completed its 22nd year of reservoir water quality monitoring to provide data for technical analysis and long-term trend evaluation to support protection of the reservoirs and drinking water supply. Three sites on each reservoir are normally monitored monthly, except during winter months. During 2013, a fourth monitoring site was added for Rocky Gorge Reservoir. The reservoirs continue to be monitored for chlorophyll-*a*, phosphorus, nitrogen, total organic carbon, chloride, color, turbidity, and selected metals. In addition, in-situ transparency and depth profile measurements of pH, conductivity, temperature, oxidation-reduction potential and dissolved oxygen were performed.

Chlorophyll-*a*

Chlorophyll-*a* (chl-*a*) is one type of chlorophyll present in all algae, and it is often used as a surrogate for algal abundance. The monitoring results for this constituent are summarized in this report and used as one indicator of reservoir water quality. The MDE amended Maryland's water quality standards by adding chl-*a* criteria for public water supply reservoirs in 2010 (Code of Maryland Regulations 26.08.02.03-3). The two criteria for public water supply reservoirs are:

1. *The arithmetic mean of a representative number of samples of chlorophyll-*a* concentrations, measured during the growing season (May 1 to September 30) as a 30-day moving average may not exceed 10 micrograms per liter ($\mu\text{g/L}$); and*
2. *The 90th-percentile of measurements taken during the growing season may not exceed 30 micrograms per liter.*

Weekly, active chl-*a* samples collected from the Patuxent Water Plant are used to determine compliance with the first criterion. The 30-day moving average did not exceed the 10 $\mu\text{g/L}$ threshold during the growing season (Figure 3). The moving average ranged from about 1.5–4 $\mu\text{g/L}$.

Six sets of chl-*a* samples were collected from the reservoirs during the 2013 growing season (May-September). Chl-*a* results were averaged from all monitoring stations to determine the 90th percentile values for each reservoir. Active chl-*a* results were used to better indicate living algal biomass rather than total chl-*a*. The top of each box corresponds to the 90th percentile value (Figure 4). The 90th percentile threshold was not exceeded by either reservoir in 2013. The 90th percentile value for Triadelphia (19.3 $\mu\text{g/L}$) was greater than that for Rocky Gorge (14.7 $\mu\text{g/L}$), and the median (50th percentile) value for Triadelphia was about two times that of Rocky Gorge.

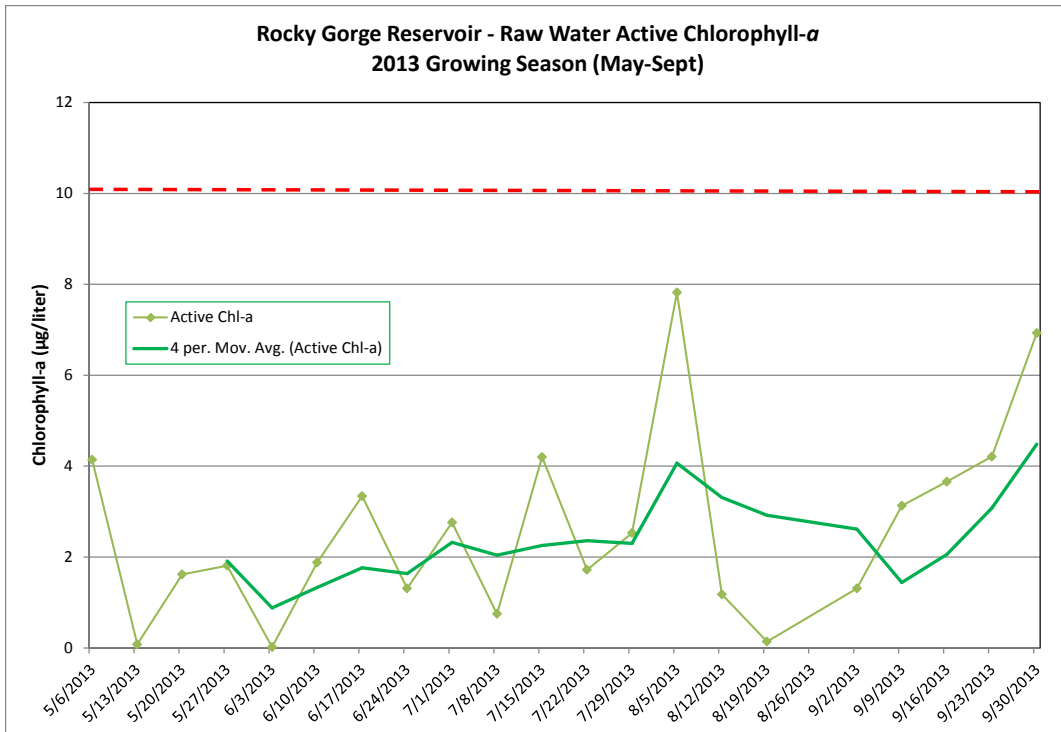


Figure 3. Chlorophyll-a results for 2013 growing season from Patuxent Water Plant

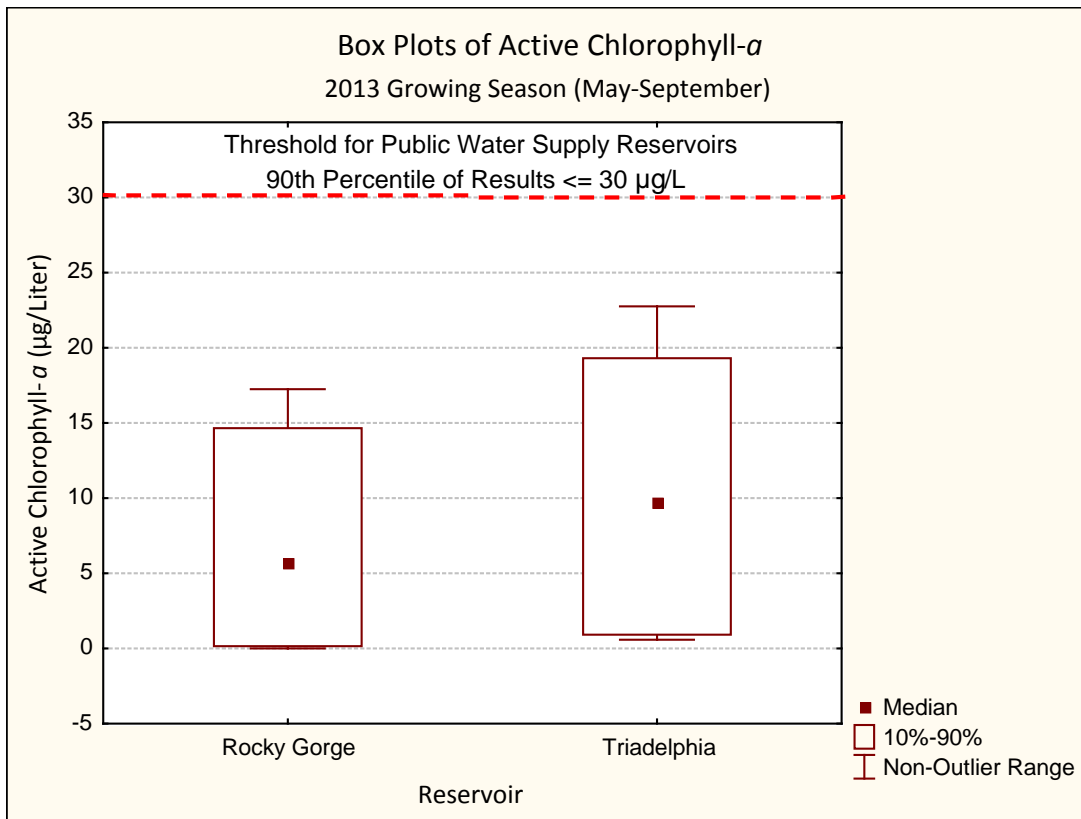


Figure 4. Chlorophyll-a results for 2013 growing season from Patuxent Reservoirs

Management of WSSC-Owned Land Surrounding Patuxent Reservoirs

In 2012, WSSC completed a study of its water supply protection buffer lands surrounding the Rocky Gorge and Triadelphia reservoirs. Details of the findings were included in the 2012 TAC Annual Report and a briefing was given during the 2012 Policy Board meeting. WSSC amended its Watershed User Regulations in early 2013 to increase public access and recreation opportunities on WSSC property such as:

- Allowing equestrian access to designated trails.
- Expanding recreation activities to include hiking and bird watching in designated areas.
- Expanding recreation season from March 15 through November 30.
- Assessing new fees for equine boarding stables, adjacent landowners desiring private access, and picnicking.

Update on Wastewater Pumping Stations in the Watershed

In March 2013, a sanitary sewer overflow from WSSC's Reddy Branch Wastewater Pumping Station (WWPS) released just over two million gallons of untreated wastewater into a tributary of the Hawlings River, upstream from Rocky Gorge Reservoir. Following this release, the TAC undertook an assessment of all WWPS facilities within the Patuxent Reservoirs Watershed. It is noteworthy that the overflow was not a failure at the WWPS, but rather was a result of a broken force main that required the pumping station to be taken out of service temporarily.

There are 13 WWPS facilities located in the Watershed: six are operated by WSSC and seven are operated by Howard County (Figure 5). All of the Howard County facilities are in close proximity to Rocky Gorge Reservoir; as is one WSSC facility. The other five WSSC pumping stations are further upstream in the Watershed: four are on tributaries of the Patuxent River between Rocky Gorge Reservoir and Triadelphia Reservoir; and one is far upstream of Triadelphia Reservoir.

The rated flow capacities of the WWPSs were compiled, together with the flow path length for any wastewater discharge before it would reach the drinking water intake at Duckett Dam. As noted above, some flows are in tributary watercourses before reaching the reservoir. Travel time within the reservoir is not known precisely but can be estimated approximately. The time of travel offers a relative means to assess adverse impacts to drinking water quality, including response time. Potential total quantities of wastewater that could be released from the WWPSs under assumed discharge duration scenarios can also be taken into account, depending on what flow each facility could handle under maximum flow conditions.

It was also learned that all of the WWPS facilities have written spill response plans, receive routine preventive maintenance and inspections, and have built-in redundancy for their power supplies (i.e., backup generator or dual feed electric supply). Taken together, these mitigation measures suggest a minimal chance that wastewater releases would adversely affect the drinking water supply.

In the case of the March 2013 overflow, and despite the large quantity of wastewater released, it was determined that there would have been negligible impact on the reservoir water quality from excess nutrient or total organic carbon (TOC) loads. This is due to substantial dilution (during a major winter storm event) and lengthy travel time within the reservoir, such that upstream effects (if any) would be impossible to distinguish downstream at the water plant intake. In addition, the main human health concern for pathogenic exposures to untreated wastewater was limited to the immediate area of the overflow at the WWPS facility. The cold winter weather was not conducive to bacterial survival in the environment. Pathogenic loadings from a wastewater discharge would not be distinguishable from other events such as major storms, which carry substantial loadings of fecal bacteria from wildlife and other (non-human) sources. The disinfection process at the water plant is fully sufficient to manage the range of pathogenic loadings in the source water.

The TAC agreed that a good precaution for responding to future wastewater overflows would be the establishment of a joint WSSC-Howard County communications protocol so that WSSC would receive prompt word of any overflows at Howard County's WWPS facilities near the drinking water intake.

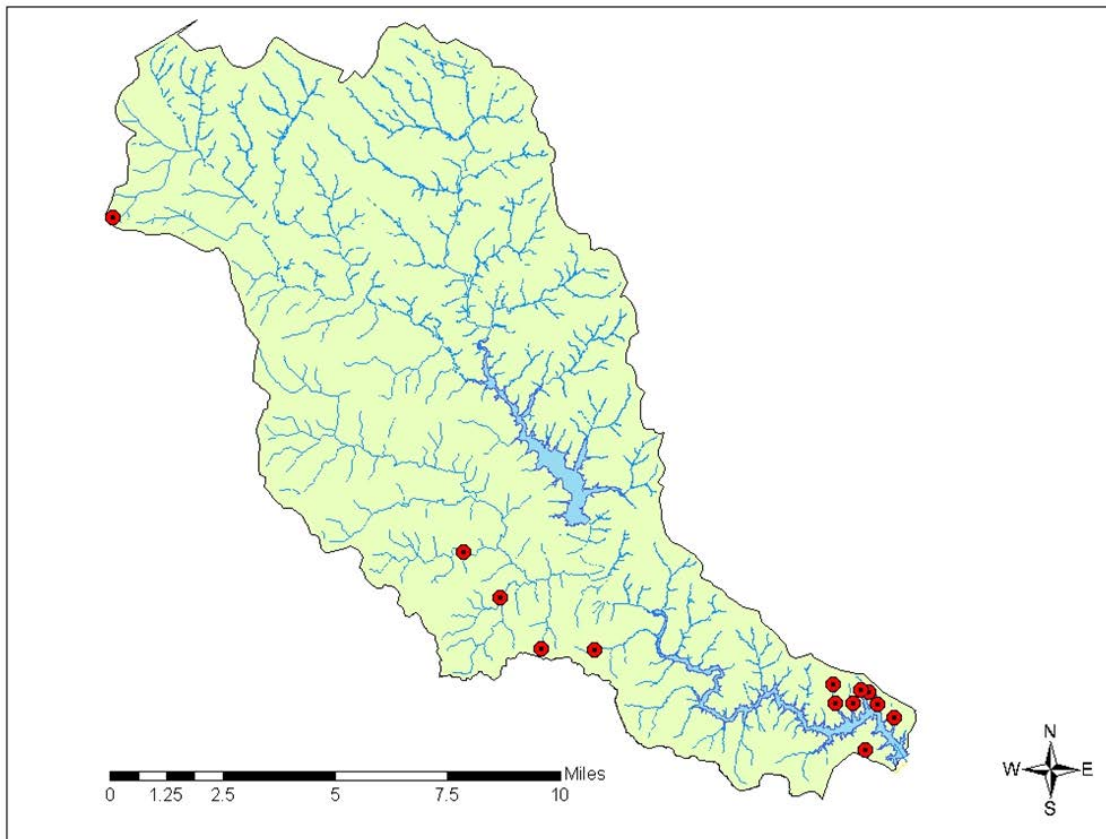


Figure 5. Wastewater pumping station locations in the Patuxent Reservoirs Watershed.

Stream Systems

Stream corridor management activities include stream channel stabilization and restoration, and implementing streamside Best Management Practices (BMPs). These activities are targeted at stream channel reaches that were identified in stream corridor assessment surveys as severe problem areas for erosion. These activities help restore and protect the stream system, improve habitat and water quality for aquatic biota, and support protection of the reservoirs and water supply.

Cherrytree Farms Stream Restoration Project

The third year of post-construction monitoring by Howard County for the Cherrytree Farms stream restoration project was completed in winter 2013. The restoration reach is an unnamed tributary to the Rocky Gorge Reservoir and is adjacent to Sand Cherry Lane in Scaggsville. The project area consists of a total of approximately 670 linear feet. Construction of the restored channel was completed in April 2010. Overall, the results of the year three annual monitoring assessment indicated that minor channel adjustments are occurring, but do not appear to pose a threat to the overall stability of the channel. Some areas of localized minor repairs and replanting were suggested.

Aquatic Biota

Tributary Biological and Habitat Monitoring

Biological and habitat monitoring of the tributaries is used to track progress in protecting the stream system and aquatic biota, as land cover changes occur and stream restoration and streamside BMPs are implemented. These monitoring efforts can also identify problem areas and provide indicators for possible problem sources to help guide future restoration efforts.

Howard County

The Howard County Department of Public Works, Stormwater Management Division initiated the Howard County Biological Monitoring and Assessment Program in the spring of 2001. The program involves monitoring the biological and physical condition of the county's water resources to monitor status and detect trends at the stream level, the watershed level, and ultimately the county level. The Department of Public Works (DPW) initiated the program to establish a baseline ecological stream condition for all of the county's watersheds². The third round of sampling the Cattail Creek and the Upper and Lower Brighton Dam watersheds was completed in 2012 (Figure 6).

² Rogers, G., B. Franks, T. Hage, and M. Southerland. *Howard County Biological Monitoring and Assessment, Upper Brighton Dam, Lower Brighton Dam, and Cattail Creek Watersheds – 2012*. Prepared by Versar, Inc., Columbia, MD for Howard County, Department of Public Works, Stormwater Management Division, Columbia, MD. December 2012.

Biological results from aquatic insect (aka benthic macroinvertebrate) samples indicate these subwatersheds are in good to fair condition. Of the thirty sites surveyed, twenty-two (73%) received an overall benthic index rating of good, six (20%) received a rating of fair, and two (7%) received a rating of poor. The habitat assessment results indicate average subwatershed physical habitat conditions that were often supporting biological conditions similar to reference streams in all three sub-watersheds. Of the thirty sites surveyed, nine (30%) were comparable to reference streams, eighteen (60%) were supporting, one (3%) was partially supporting and two (7%) were non-supporting. Results from the Cattail Creek watershed are provided as an example (Figure 7). The complete report, including a comparison of the three rounds of survey results, can be found at the DPWs' [Watershed Survey web page](#).

If funding is available in 2015, the DPW plans to conduct its biomonitoring program in the Rocky Gorge watershed.

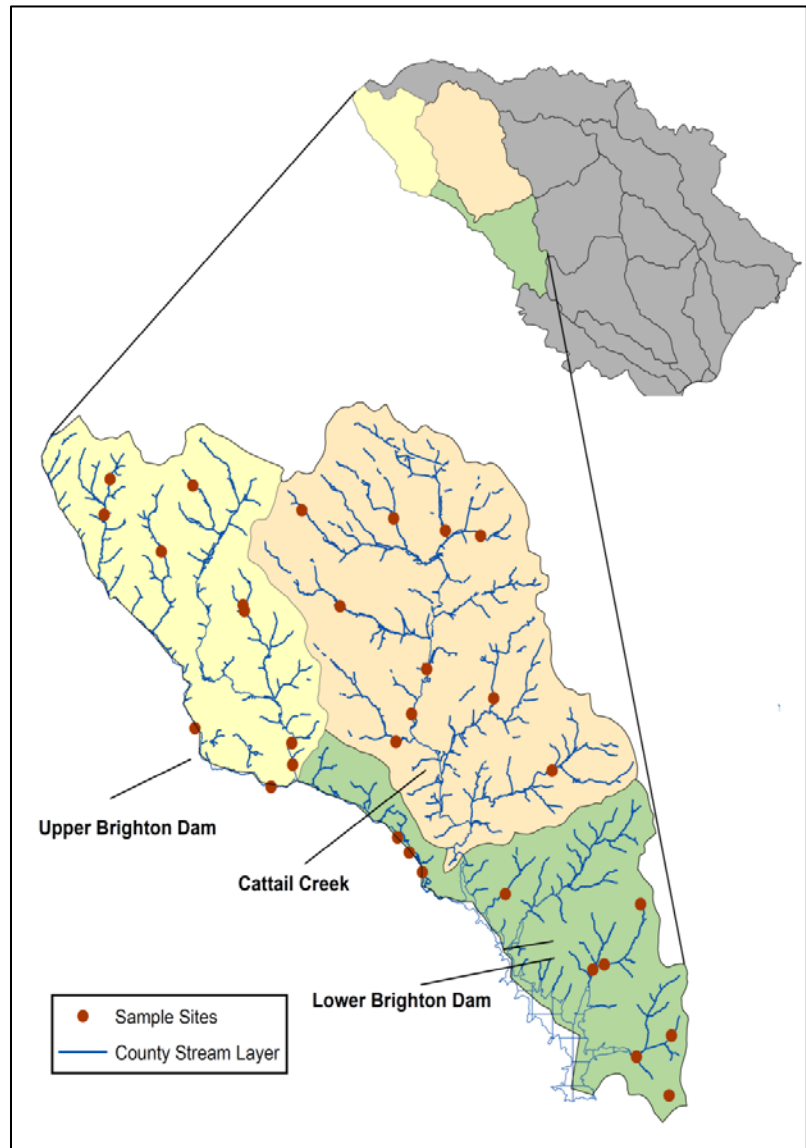


Figure 6. Bioassessment sampling locations in the Patuxent Reservoirs Watershed

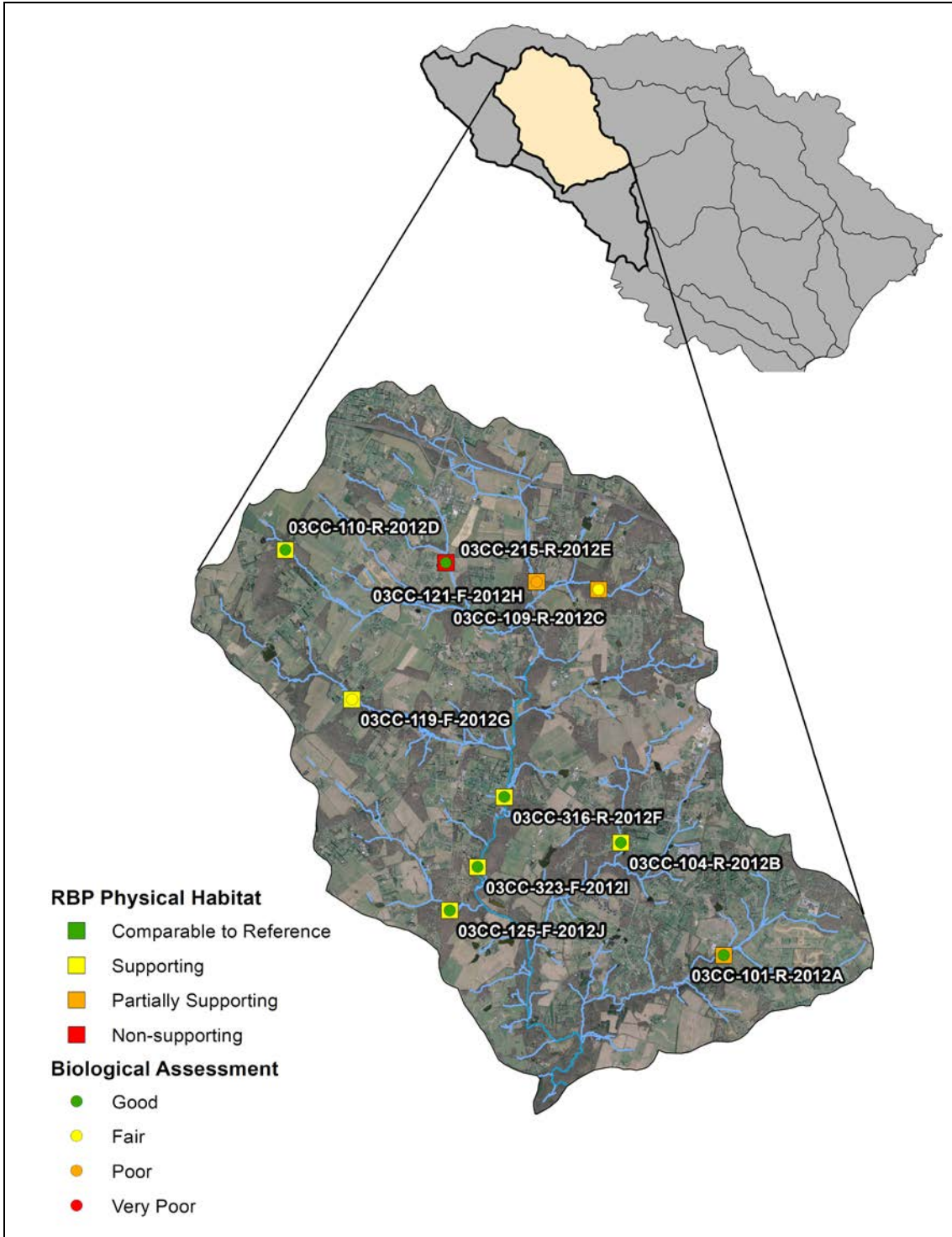


Figure 7. Cattail Creek watershed sampling results for 2012

Rural Character and Landscape

Agricultural Progress

A summary of the progress made during 2013 by both the Howard and Montgomery Soil Conservation Districts (SCDs) is provided in Table 4. The SCDs use funding from local, state and Federal programs to provide technical and financial assistance to landowners for the installation of agricultural BMPs. The numbers reported account for activity from July 1, 2012 through June 30, 2013. Note that estimated pollutant load reductions have been assigned in the Chesapeake Bay Program Model for nutrients and total suspended solids for BMPs shaded in Table 4. Estimating load reductions from agricultural BMPs will be part of the TAC's planned assessment of progress made thus far toward achieving the reservoir TMDL goals.

Table 4. Agricultural Progress for 2012-13 in the Patuxent Reservoirs Watershed

| | Howard SCD | Montgomery SCD | Total |
|---|-------------|----------------|-----------|
| Conservation Plans developed (acres) | 3 (198) | 7 (661) | 10 (859) |
| Conservation Plans Revised (acres) | 20 (2358) | 2 (315) | 22 (2673) |
| Landowners Applying BMPs | 12 | 13 | 25 |
| Educational/Outreach Events | - | 2 | 2 |
| Best Management Practices Installed | 53 | 88 | 141 |
| Best Management Practice | | | |
| Access Control (acres) | 2 (13.8) | - | 2 (13.8) |
| Ag Waste Storage Structure | - | 1 | 1 |
| Critical Area Planting (acres) | - | 0.2 | 0.2 |
| Conservation Crop Rotation (acres) | 1 (50.5) | 217.5 | 268.0 |
| Cover Crop (acres) | - | 1937.0 | 1937.0 |
| Diversion (feet) | 1 (200) | - | 1 (200) |
| Forage Harvest Management | - | 54.9 | 54.9 |
| Grassed Waterways (acres) | 4 (0.7) | 0.9 | 1.6 |
| Heavy Use Area Protection (acres) | 1 (0.1) | 0.2 | 0.3 |
| Livestock Exclusion Fencing (feet) | 2 (1666) | 1896.0 | 3562.0 |
| Livestock Watering System/Watering Facility | 2 | 2 | 4 |
| Nutrient Management (acres) | 28 (1550.1) | 31.6 | 1582.7 |
| Pasture /Hayland Planting (acres) | - | 1.8 | 1.8 |
| Pest Management (acres) | 1 (0.1) | 92.3 | 92.4 |
| Pipeline (feet) | 2 (2050.0) | 1150.0 | 3200.0 |
| Prescribed Grazing (acres) | 1 (23.6) | 14.5 | 38.1 |
| Residue Management – Mulch Till (acres) | - | 36.8 | 36.8 |
| Residue Management – No Till (acres) | - | 179.0 | 179.0 |
| Roof Runoff System | - | 1 | 1 |
| Sediment Control Pond | 1 | | 1 |
| Spring Development | - | 2 | 2 |
| Structure for Water Control | 1 | | 1 |
| Waste Utilization/Recycling (acres) | 6 (179.0) | 204.0 | 383.0 |

Two charts are also included to summarize progress of the SCDs since 2004. The MDE used the water quality data collected from 1998-2003 to establish the TMDLs for the reservoirs; therefore, summarizing the cumulative progress since that time period provides a partial means to support an assessment of pollutant reductions since the EPA established the reservoir TMDLs. The charts show the number of farm acres with an established Soil Conservation and Water Quality Plan (Figure 8) and the number of BMPs installed (Figure 9). Since 2004, plans have been written for more than 10,700 acres (about 17 square miles), and 1,467 BMPs have been installed.

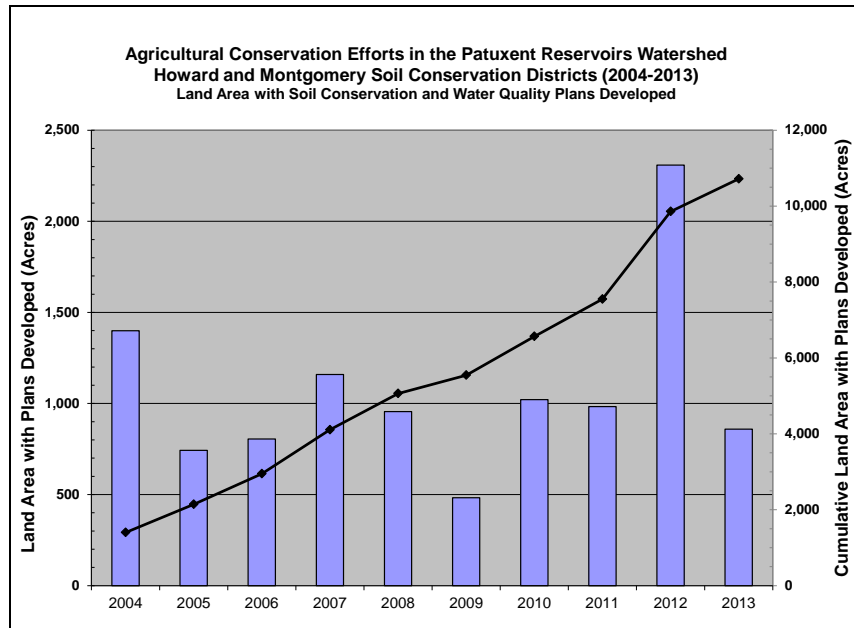


Figure 8. Farm Acres with Soil Conservation and Water Quality Plans

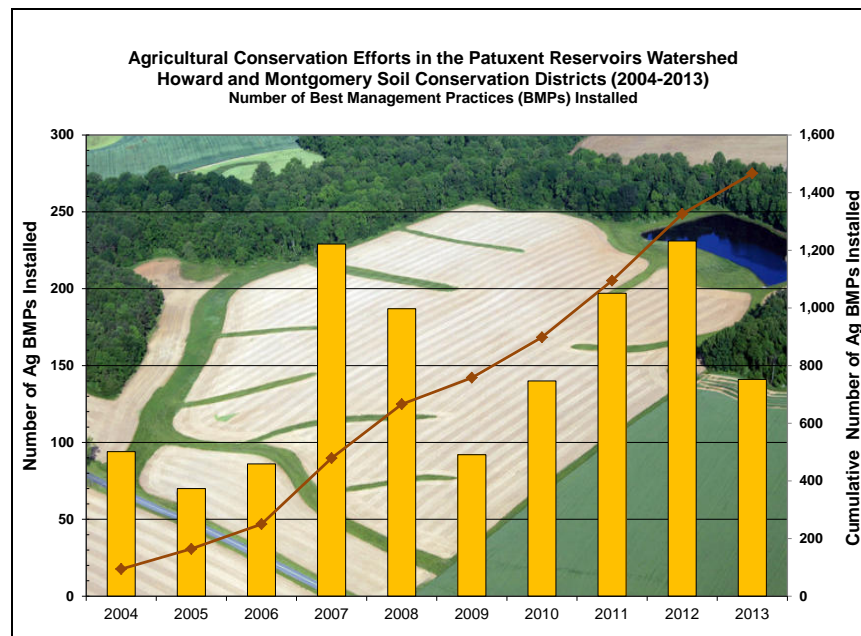


Figure 9. Number of Best Management Practices Installed

Patuxent Reservoirs Watershed Agricultural Cost-Share Program

In 1998, the Patuxent Reservoirs Watershed Protection Group created the *Patuxent Reservoir Protection Strategy Memorandum of Understanding (MOU)*, which established the Patuxent Reservoirs Watershed Agricultural Cost-Share Program. This cost-share program focuses on implementing BMPs that will benefit nearby stream systems. The program is targeted at small agricultural operations that may not qualify for other state and federal cost-share programs. In the Patuxent Reservoirs Watershed, many of these operations are small horse farms.

During the December 2012 annual meeting of the PRWPG, the Policy Board approved a request by the HSCD for \$50,000 to continue funding this cost-share program. The MSCD still has funds available for the program. The Policy Board approved the request, with Howard County providing two-thirds (\$33,333) of the funding and the WSSC providing the remaining one-third (\$16,667). This increased funding proposal was also a catalyst to improve the relevancy and practicality of the cost-share program.

Efforts this year focused on collaboration among partnership agencies to update and amend details of the original MOU that established the agricultural cost-share program. A subcommittee was tasked with developing recommendations to improve the usefulness of the cost-share program by broadening the practices and landowners that could qualify for assistance. Many details of the original program established fifteen years ago were outdated and did not reflect current conservation objectives. The subcommittee drafted a new MOU that underwent a succession of technical and legal reviews. It is expected that the new MOU will be signed in early 2014, which will release new funding for the program. The subcommittee is optimistic that these amendments to the program will elicit additional interest from the agricultural community. The remaining funds in this cost-share program as of June 30, 2013 are:

| | |
|-------|-----------------|
| HSCD | \$752 |
| MSCD | <u>\$39,845</u> |
| Total | \$40,597 |

Howard County Comprehensive Rezoning

Howard County adopted a new comprehensive plan, *PlanHoward 2030*, in 2012. This was followed by the Comprehensive Zoning Plan process in 2013, to implement key policy recommendations in *PlanHoward 2030*. The Comprehensive Zoning Plan process included rezoning parcels, the creation of new zoning districts, and changes to the Zoning Regulations. The following changes implemented by this process may impact the Patuxent Reservoirs Watershed in Howard County.

The majority of the Reservoirs Watershed is outside the Planned Service Area (PSA) for public water and sewer service, and is zoned Rural Residential (RR), for low density residential development, and Rural Conservation (RC), for farming and low density, clustered residential development. A small portion of the Reservoirs Watershed is within the PSA and is zoned for more dense residential development.

The rezoning of parcels in the Reservoirs Watershed included several small properties that were rezoned from residential to commercial uses. These rezonings occurred primarily within existing, small, rural commercial centers at Glenwood and Highland. In addition, some existing commercial areas that were nonconforming uses because they were in a residential zone were rezoned to business zones.

A large parcel of just over 91 acres in Fulton, known as Maple Lawn South, was also rezoned from Rural Residential to Residential-Environmental Development with a Mixed Use Development overlay district. This parcel was designated in *PlanHoward 2030* to be included in an expansion of the PSA, because it is close to US Route 29 and the Maryland Transportation Administration commuter bus service/park and ride lot, as well as immediately adjoining the approved Maple Lawn Mixed Use Development, which was designated as a mixed use growth area in the 1990 General Plan.

A new zoning district, Business Rural Crossroads (BRX) was created and applied to four existing commercial centers at Highland, Dayton, Lisbon and Glenwood. This is an overlay district that allows a property that adjoins an existing commercial use to request a BRX designation, which permits a number of commercial uses. In addition, a few new conditional use categories were added: waste composting facility in RC; and mulch manufacturing, soil processing and country spas in RC and RR.

A number of regulatory changes were made to provide flexibility in the regulations and accommodate modern farming:

- The definition of farming was expanded to clarify currently permitted uses and accommodate modern farming operations.
- The definition of a farm was changed from a parcel that is principally used for farming to a parcel of 3 acres or larger that is used for farming. There is no limit on the number of livestock a farm may have, and this change could potentially increase the number of parcels in the watershed that are considered farms from a zoning perspective.
- Residential properties of less than 3 acres are now limited to 1,000 pounds of livestock for every acre. (One horse is equivalent to 1,000 pounds of livestock.)
- Structures on residential properties of 500 square feet or larger that house animals must be located 200 feet from an existing house on another lot. Structures less than 500 square feet that house animals must be located 100 feet from an existing house on another lot. There are exceptions for structures that house pets, apiaries and chickens. However, a residential property may keep no more than 8 hens.
- The requirements for conditional uses on agricultural preservation easements were tightened and the use is limited to 2 percent of the easement acreage, to ensure the land remains available for farming.
- The list of permit uses was expanded – these are agriculturally-related uses that are allowed through the approval of a zoning permit under certain conditions, upon the request of the landowner. Previous permit uses were value added processing, pick your own, farm stand and agri-tourism. New permit uses were added for community supported agriculture, food hub, and riding academy and stable. An additional amendment is currently being processed to add farm breweries.

Public Awareness and Stewardship

The TAC agencies and other groups in the watershed continued to coordinate public outreach and involvement initiatives during 2013. Under the coordination of WSSC Communications and Community Relations Office staff, there were 30 environmental stewardship events in 2013, as well as other successful outreach events coordinated by other TAC agencies that occurred in Howard, Montgomery, and Prince George's Counties. Approximately 2,000 people participated in these outreach initiatives.

Family Campfire

The Annual Family Campfire event was held on Saturday, September 28, 2013 at WSSC's headquarters in Laurel, in order to provide the program in Prince George's County. It is intended to rotate this event between Montgomery and Prince George's Counties each year. WSSC followed the successful format of the last two years: holding it in the late afternoon to evening on a Saturday and including a "watershed fair" of activities and displays of interest to children and their parents. The fair included over 20 activities and presentations where the children and their families could gain some understanding of where they live in relationship to the watershed and what they can do to help protect the watershed and the source water. This year WSSC also contracted with *Class Acts Arts* to bring entertainer Billy B., to our event. He sings and dances to teach children of all ages about the wonders of natural science, ecology and the environment. His program entitled "Ways of the Bay" was a perfect fit for the campfire event, where emphasis on protection of drinking water sources is important. The entertainment segment was followed by a traditional campfire with marshmallows and chocolate. Approximately 23,000 flyers were distributed to schools, community centers and libraries. A media release was also sent to several area newspapers.

More than 600 people attended this event. Mr. Adam Ortiz, Director of the Prince George's County Department of Environmental Resources (DER) served as Master of Ceremonies, and Deborah Weller gave a welcome address on behalf of the Patuxent Reservoirs Watershed Protection Group. The campfire was managed by scouts from Boy Scout Troops in the Laurel area. Music and refreshments were provided by the WSSC. The WSSC takes great pride in hosting this event and provides the staff for all preparations of the site as well as clean up on the day of the event.

Izaak Walton League of America-Wildlife Achievement Chapter

The Izaak Walton League of America-Wildlife Achievement Chapter (IWLA-WAC) in Damascus continued to sponsor outreach and involvement events for its members and the general public during 2013. These included:

- Spring and Fall watershed clean-ups working with the Maryland Department of Natural Resources (DNR) and the Montgomery County Department of Transportation (DOT).
- June and August Adopt-A-Road clean-ups with the DOT.
- Free workshop in March for 'Make and Take' Rain Barrels with 30 participants.

- Two work days for deer exclusion and invasives maintenance for the Reddy Branch reforestation, led by the M-NCPPC, Montgomery County Planning Department.
- Two work days at Pigtail recreation area, a tree planting site on WSSC property, to continue invasives management and tree maintenance.
- Numerous work days on the Chapter's 120-acre property in Montgomery County for invasives management and native plantings.

Oaks Landfill Reforestation

The Montgomery SCD received a \$25,000 grant from Chesapeake Bay Trust to reforest a section of the County-owned Oaks Landfill just south of Laytonsville. This area is located in the headwaters portion of the Hawlings River watershed. Although this is not a traditional agricultural BMP, the area is a large open field that is mowed periodically and sometimes cut for hay. The MSCD coordinated the project with Montgomery County DEP, who owns the landfill site, and partnered with Montgomery County Public Schools to complete a large scale volunteer tree planting in April during Earth week. Several groups donated planting stock for the project, including the M-NCPPC, the DNR, and PEPCO. Master Gardeners from the University of Maryland Extension program were enlisted to help supervise the volunteers.

Volunteer plantings were initially held in the spring and fall of 2011 using containerized trees and shrubs. This was followed by seedling plantings in spring 2012 and spring 2013, and a final containerized planting was done with about 50 students from Sherwood High School also in spring 2013. The planting site now has several thousand trees and shrubs and is transitioning from an open field to an early successional stage forest. The project was so successful that the Department of Natural Resources has provided Montgomery County with a \$75,000 grant to use the same methodology to reforest another 30 acres of open field at the landfill site. Once established, this 40 acres of new forest will have tremendous benefits for the watershed and the surrounding community.

Patuxent River Clean-up

In cooperation with the office of the Patuxent Riverkeeper, the WSSC Communications and Community Relations Office participated once again in the annual *Patuxent River Clean-up*. The designated clean-up day was April 13, 2013, but groups also worked on other Saturdays in April to accomplish the massive clean-up. Approximately 70 volunteers from the neighboring communities, church groups, and Boy and Girl Scout troops formed work crews at seven WSSC recreation areas, collecting hundreds of pounds of trash and recyclables. All clean-up efforts for the month were included in the final tallies reported to the Riverkeeper. Site leaders for this effort volunteered their time to organize, recruit, and report for this Clean-up event.

RainScapes Rewards Program

The Montgomery County DEP continued its countywide RainScapes Rewards Program to provide rebates to property owners who voluntarily install practices that capture and store runoff from rooftops and paved areas in their yards, thus reducing storm water impacts downstream.

The majority of these projects were urban tree canopy plantings. Combined savings are possible for these projects using \$25 coupons from both the Maryland DNR and the M-NCPPC, and the RainScapes \$150 per tree rebate. Rainwater harvesting practices using rain barrels or cisterns are the second most popular practice for the rebate program. No rain gardens have been installed in the Reservoirs Watershed through the RainScapes Rewards program.

By the end of FY13, there were 40 projects installed in the Patuxent Reservoirs Watershed, managing runoff from 23,835 square feet of impervious surfaces. There were 19 tree canopy projects for over 70 trees planted, along with 15 rain barrels and three cistern projects, four conservation landscapes, and one pervious paver project installed. Applicants spent \$53,586 and received \$18,088 in rebates.

Soil Conservation District Agriculture Outreach Efforts

The HSCD continued to help sponsor a Pasture Management Workshop and pasture walks for horse owners at the University of Maryland–Central Maryland Research and Education Center farm in Clarksville. Although this location is in the Middle Patuxent River Watershed, it included attendees from the Patuxent Reservoirs Watershed and surrounding areas.

The HSCD also sponsored the Mid-Winter Agricultural Meeting that educated approximately 50 attendees concerning farm diversification to include the next generation, the Chesapeake Bay TMDL and nutrient trading.

WSSC Property - Environmental Stewardship

The WSSC owns and manages about 5,600 acres that surround both of the Patuxent Reservoirs. The WSSC held 30 cleanup events with a total of over 700 volunteers this year. The opportunities were held along the Patuxent River with partners such as the University of Maryland-College Park, IWLA-WAC, West Laurel Civic Association, Boy and Girl Scouts troops, engineering firms and local high schools. Projects included planting native trees, removing invasive weeds, planting wildflowers and cleaning out culverts.

The WSSC also held its fourth annual Warbler Day at Pig Tail Recreation Area in May. More than 20 people attended in conjunction with the Howard and Montgomery County Bird Clubs. Forty different species of birds were spotted. In the afternoon of the same day, the WSSC conducted a Tree Tour at the Triadelphia Recreation Area.

Table 5. Performance Measures and Goals for Priority Resources

PRIORITY RESOURCES: GOALS & PERFORMANCE MEASURES

Resource: Reservoir/Water Supply

Issue: The public need for a sufficient quantity of safe and high quality drinking water calls for adopting a proactive and multi-barrier approach, which starts with utilizing raw water of the highest quality and sustainable quantity, now and in the future. To achieve this for the Patuxent water filtration plant, we need to control reservoir eutrophication, reduce disinfectant by-products precursors, and limit reservoirs capacity loss.

| Measures | Goals | Implementation Items | Time Line | Responsible Partner |
|--|---|--|----------------------------------|---------------------|
| Chlorophyll- <i>a</i> (chl- <i>a</i>) | <ul style="list-style-type: none"> Chl-<i>a</i> not to exceed a 10 µg/L mean during the growing season and not to exceed a 30 µg/L instantaneous concentration | <ul style="list-style-type: none"> Perform reservoir monitoring for chl-<i>a</i>, DO, and TOC during the growing season | Ongoing | WSSC |
| Dissolved oxygen (DO) | <ul style="list-style-type: none"> DO not to fall below 5 mg/L at any time in the epilimnion, not to fall below 5 mg/L in the entire water column during completely mixed periods, and not to fall below 10% saturation at any time in the hypolimnion | <ul style="list-style-type: none"> Perform reservoir monitoring for CHL-<i>a</i>, DO, and TOC during the growing season | Ongoing | WSSC |
| Suite of water quality parameters in reservoir monitoring protocol | <ul style="list-style-type: none"> Five-year data trend analysis for other monitored water quality parameters shows no net deterioration | <ul style="list-style-type: none"> Develop and begin implementation of a plan to reduce nutrients, based on model/TMDL requirements Update trend analysis for reservoir water quality parameters on a 5-year cycle | Ongoing Next Update: 2014 | TAC WSSC |
| Total organic carbon (TOC) | <ul style="list-style-type: none"> TOC – 20% annual reduction goal, with 40% reduction for peak quarter at the location where water is withdrawn for treatment purposes | <ul style="list-style-type: none"> Perform reservoir monitoring for CHL-<i>a</i>, DO, and TOC during the growing season | Ongoing | WSSC |
| Sediment | <ul style="list-style-type: none"> Sediment accumulation rate not to exceed previous years | <ul style="list-style-type: none"> Perform bathymetric survey of reservoirs at 10 year intervals or less | Next Survey in 2014/2015 | WSSC |

PRIORITY RESOURCES: GOALS & PERFORMANCE MEASURES (continued)

Resource: Terrestrial Habitat

Issue: Preservation of forests provides water quality benefits by reducing sediment and nutrient loading of streams from surrounding land uses.

| Measures | Goals | Implementation Items | Time Line | Responsible Partner |
|-----------------------|---|--|---|----------------------------|
| Forest Cover | <ul style="list-style-type: none"> Maintain and increase forest cover Increase forest interior habitat | <ul style="list-style-type: none"> Encourage private property owners to participate in tree planting programs Ensure publicly owned parkland and open space is forested to the maximum extent possible | Ongoing | TAC |
| | | | 2006 – 2023 | TAC |
| Forest Connectivity | <ul style="list-style-type: none"> Improve forest connectivity (larger forest tracts are connected by forest corridors) | <ul style="list-style-type: none"> Target reforestation and forest conservation programs to increase forest connectivity and forest interior habitat | Ongoing | TAC |
| Forest Size | <ul style="list-style-type: none"> Increase forest size | <ul style="list-style-type: none"> Encourage private property owners to participate in tree planting programs Ensure publicly owned parkland and open space is forested to the maximum extent possible | Ongoing | TAC |
| | | | 2006 – 2023 | TAC |
| Forest Diversity | <ul style="list-style-type: none"> Ensure diverse forest communities (communities contain a variety of species and ages) | <ul style="list-style-type: none"> Develop a forest management plan to ensure forest diversity and long-term natural regeneration, identifying and addressing potential problems such as excessive deer populations, invasive species and human impacts | 2006 – 2013 WSSC Plan completed FY08 | TAC WSSC |
| Forest Sustainability | <ul style="list-style-type: none"> Ensure forests are self-sustaining and capable of long-term natural regeneration | <ul style="list-style-type: none"> Implement deer management programs Implement strategies for control of invasive plants | Ongoing | TAC |
| | | | Ongoing | TAC |

PRIORITY RESOURCES: GOALS & PERFORMANCE MEASURES (continued)

Resource: Stream System

Issue: Preventing stream habitat degradation - The stream system includes all intermittent and perennial streams and their adjacent floodplains. A stable stream system provides significant nutrient and sediment removal during both baseflow and storm flow events. The stream and its associated riparian buffer are also important as sources of high quality food and habitat for both aquatic and terrestrial organisms.

| Measures | Goals | Implementation Items | Time Line | Responsible Partner |
|--|--|--|---------------------------------------|---|
| Buffer corridor width and continuity | <ul style="list-style-type: none"> A minimum 35-foot riparian buffer on all streams on properties that were developed prior to current stream buffer requirements | <ul style="list-style-type: none"> Establish and maintain minimum 35-foot riparian buffers on all publicly-owned land Accelerate programs to establish and maintain streamside buffers to a minimum of 35 feet on privately-owned lands to the maximum extent possible | <p>2006 – 2013</p> <p>2006 – 2023</p> | <p>WSSC, M-NCPPC, HC, MC</p> <p>WSSC, M-NCPPC, HC, HSCD, MC, MSCD</p> |
| Stream bank and stream channel stability | <ul style="list-style-type: none"> No areas of "severe" or "very severe" stream bank erosion based on the Stream Corridor Assessments and other locally collected data. | <ul style="list-style-type: none"> Establish and maintain streamside fencing programs to keep all livestock out of streams to the maximum extent possible Address <u>significant</u> areas of stream bank and channel instability through stream restoration projects and storm water retrofits to the maximum extent possible | <p>2006 – 2013</p> <p>2006 – 2013</p> | <p>HSCD, MSCD</p> <p>HC, HSCD, M-NCPPC, MC</p> |

PRIORITY RESOURCES: GOALS & PERFORMANCE MEASURES (continued)

Resource: Aquatic Biota

Issue: Biological Integrity– This is the condition of the benthic macroinvertebrate communities based on a comparison to a reference stream in Montgomery County. A reference stream is relatively undisturbed and therefore the best quality to be expected in the region that includes the Patuxent Reservoirs Watershed.

| Measures | Goals | Implementation Items | Time Line | Responsible Partner |
|-------------------------------------|---|---|---------------------------------------|---|
| IBI - Index of Biological Integrity | <ul style="list-style-type: none"> No subwatershed with a benthic IBI indicating "fair" or "poor" condition | <ul style="list-style-type: none"> Pursue cost-share funds to construct agricultural BMPs, stream restoration, and storm water retrofit projects to address factors contributing to degraded biological integrity Mitigate runoff impacts from land use changes | <p>2006 – 2023</p> <p>2006 – 2023</p> | <p>HC, HSCD, MC, MSCD, M-NCPPC</p> <p>HC, MC, M-NCPPC</p> |
| | <ul style="list-style-type: none"> Preserve conditions in subwatersheds with "excellent" and "good" benthic IBIs | <ul style="list-style-type: none"> Protect existing habitat and water quality of streams in high-quality subwatersheds to the maximum extent possible by pursuing programs to maintain or increase existing land cover | <p>2006 – 2023</p> | <p>HC, HSCD, MC, MSCD, M-NCPPC</p> |

IBI - Index of Biological Integrity is also referred to as Index of Biotic Integrity in Maryland Biological Stream Survey publications.

PRIORITY RESOURCES: GOALS & PERFORMANCE MEASURES (continued)

Resources: Rural Character and Landscape

Issue: Preserving open spaces and maintaining an economically viable and environmentally protective agricultural community.

| Measures | Goals | Implementation Items | Time Line | Responsible Partner |
|--|---|---|--|---|
| Agricultural Preservation Enrollment <ul style="list-style-type: none"> • Total acres enrolled • Number of farms enrolled | <ul style="list-style-type: none"> • Preserve the agricultural and rural nature, and open space of the watershed | <ul style="list-style-type: none"> • Continue easement acquisition through agricultural land preservation programs • Continue agricultural economic development programs | Ongoing Ongoing | HC, MC HC, MC |
| Agricultural Demographics <ul style="list-style-type: none"> • Acres of agricultural land • Market value of agricultural production • Size of farms • Types of farms | <ul style="list-style-type: none"> • Preserve the agricultural and rural nature, and open space of the watershed | <ul style="list-style-type: none"> • Continue zoning and land use policies in the watershed to maintain rural character • Continue agricultural economic development programs | Ongoing Ongoing | HC, M-NCPPC HC, MC |
| Open Space and Parkland Acquisition and Easement Programs <ul style="list-style-type: none"> • Acres of open space land preserved by non-agricultural easements or acquisition | <ul style="list-style-type: none"> • Create a landscape that is protective of water quality | <ul style="list-style-type: none"> • Utilize effective open space land management practices that are beneficial to water quality | Ongoing | HC, M-NCPPC, WSSC |
| Participation in agricultural conservation programs and percent of conservation plans that are implemented | <ul style="list-style-type: none"> • Create a landscape that is protective of water quality | <ul style="list-style-type: none"> • Encourage participation in other conservation and open space preservation programs • Encourage enrollment in federal and state nutrient management and stream protection programs • Promote greater utilization of funding provided by the Reservoir Protection Group to supplement federal and state agricultural programs • Create and routinely update an electronic map based system to track BMP implementation | Ongoing Ongoing Ongoing 2006 – 2013 | HC, MC, M-NCPPC HSCD, MSCD HSCD, MSCD HSCD, MSCD |

PRIORITY RESOURCES: GOALS & PERFORMANCE MEASURES (continued)

Resource: Public Awareness and Stewardship

Issue: Awareness and support by residents and resource users

| Measure | Goals | Implementation Items | Time Line | Responsible Partner |
|---|--|--|---|---|
| Residents participating in stewardship activities | <ul style="list-style-type: none"> • Citizen action to improve watershed resources – see evidence of watershed friendly activities and practices • 10 to 15 stewardship offerings per year | <ul style="list-style-type: none"> • Identify citizen groups throughout watershed and be available for presentations upon request • Organize stewardship events and participate in other community events • Recognize good stewards through annual awards • Form “Friends of the Watershed” group of citizen volunteers that will take on tasks such as newsletter preparation and some Earth Month planning | <p>2006 – 2009</p> <p>Ongoing</p> <p>2006 – 2008</p> <p>2006 – 2009</p> | <p>TAC</p> <p>TAC</p> <p>MC, PGC, HC, M-NCPPC TAC</p> |
| Schools participating in mentoring | <ul style="list-style-type: none"> • School and community involvement – 20 participating Green School partners by end of 2003 and 5 additional schools participating each year thereafter until all 43 are attained | <ul style="list-style-type: none"> • Continue and expand Green Schools Mentoring Partnership | <p>Ongoing</p> | <p>WSSC, HC, MC, PGC, M-NCPPC</p> |
| Active support by elected officials | <ul style="list-style-type: none"> • Routine communication with elected officials | <ul style="list-style-type: none"> • Routine communication with elected officials | <p>Ongoing</p> | <p>TAC</p> |
| Routine coverage by media | <ul style="list-style-type: none"> • Expanded media coverage of watershed events – print, radio and TV | <ul style="list-style-type: none"> • Increase communication with media • Support regional efforts to establish media-savvy campaigns that emphasize water quality protection | <p>2006 – 2009</p> <p>2006 – 2008</p> | <p>TAC</p> |

Table 6. Work Plan Expenditures for Current Fiscal Year

| PATUXENT RESERVOIRS WATERSHED WORK PROGRAM FOR FY14 | | | | |
|--|--|--|-----------------|---|
| PRIORITY RESOURCES PROTECTED | IMPLEMENTATION NEED | IMPLEMENTATION ITEM | AGENCY | FY 2014 |
| Reservoir/Water Supply | Reservoir and tributary water chemistry and flow monitoring | Reservoir monitoring and lab analysis | WSSC | \$162,000 (in-kind) |
| | | 5 US Geological Survey stream flow gauging stations | WSSC | \$60,000 |
| | | 5 year Trends Analysis (next due c. FY 2014) | WSSC | \$56,000 (in-kind) |
| Reservoir/Water Supply Stream System Aquatic Biota | Stream corridor management | Patuxent Restoration Project Inventory | MC | *\$320,000 |
| ALL Priority Resources | Management of agricultural cost-share initiatives | Program oversight for voluntary implementation of agricultural BMPs through existing local, State of Maryland, and Federal programs | HSCD, MSCD | \$80,000 (HSCD in-kind) |
| | Update Patuxent Reservoirs Watershed MOU and Cost-Share Agreement | Provide funding to HSCD after revising existing MOU and cost-share program to allow more effective, continued use of program funds. | HC, WSSC | \$50,000 (\$33,333 from HC and \$16,667 from WSSC) |

* Funding continued from FY2013 for Patuxent, Monocacy, and remaining Potomac subwatershed, not new funding for FY14

PATUXENT RESERVOIRS WATERSHED WORK PROGRAM FOR FY14

| PRIORITY RESOURCES PROTECTED | IMPLEMENTATION NEED | IMPLEMENTATION ITEM | AGENCY | FY 2014 |
|-------------------------------------|---|--|--------------------------------|--|
| ALL Priority Resources | Public outreach and involvement initiatives | RainScapes Rewards | MC | Rebates available to county residents for Low Impact Development (LID) |
| ALL Priority Resources | Public outreach and involvement initiatives | Earth Month, and other outreach activities | WSSC Other TAC agencies | \$140,000 (in-kind) \$2,500 (in-kind) |
| ALL Priority Resources | Complete Annual Report and Technical Supplement | Compilation and editing | WSSC Other TAC Agencies | \$10,000 In-kind |
| | Coordination and Collaboration | Provide administrative support & coordination among partners | WSSC | \$35,000 |

| PATUXENT RESERVOIRS WATERSHED WORK PROGRAM FOR FY14 | | | | |
|---|--|--|-------------------------------|----------------------|
| PRIORITY RESOURCES PROTECTED | IMPLEMENTATION NEED | IMPLEMENTATION ITEM | AGENCY | FY 2014 |
| Reservoir/Water Supply Terrestrial Habitat Stream System Aquatic Biota Public Awareness & Stewardship | Assessment of potential watershed protection & restoration opportunities | Watershed restoration planning effort in Prince George's County portion of the Rocky Gorge Reservoir Watershed | PGC | \$2,000 (in-kind) |
| Reservoir/Water Supply Stream System Aquatic Biota Public Awareness & Stewardship | TMDL Implementation | Develop the point source part of the TMDL Implementation Plan for Howard County portion of the watershed. (includes large lot residential development) | HC | \$40,000 |
| | | Begin scoping study for TMDL Implementation Plan for both reservoirs | MC, M-NCPPC, PGC, WSSC | \$70,000 |
| TOTAL FUNDING | | | | \$1,027,500 |

Bold items indicate new items added in this Fiscal Year